

anterior to their dates, leads to a proper motion of about  $+0^s.119$  in R.A. and  $-1''.43$  in N.P.D. It would seem, then, that the most probable value of the proper motion of this star is  $+0^s.121$  in R.A. and  $-1''.40$  in N.P.D. The latter value is about  $0''.1$  larger than that in the *B.A.C.*, and about  $0''.1$  smaller than that determined by Mr. Dunkin from earlier Greenwich observations. *Prima facie*, indeed, there is almost room for suspicion that the proper motion in N.P.D. is slowly increasing, though of course not in the way suggested by Professor Piazz Smyth, which was founded on misconception.

*Blackheath :*  
1895 March 4.

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*On the Proper Motion of the Star Cephei 24 (Hev.).*  
By W. T. Lynn, B.A.

In the Introduction to the eighth volume of the *Madras Observations*, which has been recently published, Mr. Michie Smith remarks that this star (which had been used for meridian error at Madras) had no proper motion assigned to it in the Greenwich 9-year Catalogue, but that there is little doubt that it has one considerable in amount. It is of the fifth magnitude, and is numbered 3402 in Groombridge's Catalogue, and Carrington considered that it had an appreciable proper motion. Mr. Stone follows the *B.A.C.* (where it is No. 7184) in locating it in *Ursa Minor*.

I have made an approximate determination of the proper motion, and herewith offer it to the Society, remarking that it can only be considered provisional, as the fractional proper motions have not been applied in the Catalogues, but it may form a basis for doing so in future. The star is included in both the Greenwich 7-year Catalogues, in the Greenwich 9-year, and in the last Radcliffe Catalogue for 1890. The places in each of these are as follows :—

Gr. 7-year Cat. 1860 ; R.A.  $20^h 31^m 5^s.49$  (5 obs.), precession  $-43^s.554$ , sec. var.  $-23^s.6447$ .

N.P.D.  $1^\circ 17' 57''.68$  (8 obs.), precession  $-12''.27$ , sec. var.  $+5''.029$ .

Gr. 7-year Cat. 1864 ; R.A.  $20^h 28^m 10^s.22$  (2 obs.), precession  $-44^s.483$ , sec. var.  $-24^s.0088$ .

N.P.D.  $1^\circ 17' 7''.94$  (4 obs.), precession  $-12''.08$ , sec. var.  $+5''.184$ .

Gr. 9-year Cat. 1872 ; R.A.  $20^h 22^m 11^s.693$  (4 obs.), precession  $-46^s.4169$ , sec. var.  $-24^s.6431$ .

N.P.D.  $1^{\circ} 15' 32''.52$  (4 obs.), precession  $- 11''.660$ , sec. var.  $+ 5''.513$ .

Radcliffe Cat. 1890 ; R.A.  $20^h 7^m 39^s.885$  (5 obs.), precession  $- 50^s.9643$ , sec. var.  $- 25^s.6826$ .

N.P.D.  $1^{\circ} 12' 10''.57$  (5 obs.), precession  $- 10''.603$ , sec. var.  $+ 6''.313$ .

The interval between the epochs of the last two Catalogues is eighteen years, and the places are each founded in both elements upon not fewer than four observations. Reducing the Greenwich 9-year place to 1890 by precession only, allowing for its change, we obtain R.A.  $20^h 7^m 35^s.255$ , N.P.D.  $1^{\circ} 12' 12''.16$ . And as the Radcliffe place for that year is R.A.  $20^h 7^m 39^s.885$ , N.P.D.  $1^{\circ} 12' 10''.57$ , the resulting proper motion for eighteen years is  $+ 4^s.630$  and  $- 1''.59$ , making its annual value  $+ 0^s.37$  in R.A. and  $- 0''.09$  in N.P.D. Comparison between the earlier Greenwich Catalogues essentially confirms this, only making the proper motion in R.A. a little larger (about  $+ 0^s.42$ ), and also that in N.P.D. Comparison between the earliest Greenwich (7-year Cat. 1860) Catalogue in which the star is included and the Radcliffe, the interval between which is thirty years, gives a similar result,  $+ 0^s.405$  in R.A. and  $- 0''.13$  in N.P.D. ; so that there is no doubt the approximate value of this star's proper motion is  $+ 0^s.4$  in R.A. and  $- 0''.1$  in N.P.D., exceeding that of Groombridge, 1830, in the former element.

I have been led to examine also the proper motion of the star 24 *Cephei*, i.e. that (Mag. 5.4) numbered 24 in Flamsteed's list of stars in that constellation, which is known to be very small. It is included in the Greenwich 6-year, the two Greenwich 7-year, the Greenwich 9-year, and the Radcliffe Catalogue for 1890. In the later Greenwich Catalogues the proper motion  $+ 0^s.003$ ,  $+ 0''.03$  is adopted ; in the Radcliffe,  $+ 0^s.002$ ,  $+ 0''.007$ . A comparison of the places, however, in these would give one somewhat larger in N.P.D., whilst that in R.A. is clearly quite inappreciable. The places are as follows :

	R.A.	No. of Obs.	N.P.D.	No. of Obs.
	<sup>h</sup> <sup>m</sup> <sup>s</sup>		<sup>°</sup> <sup>'</sup> <sup>''</sup>	
Greenwich 9-year	22 7 20.527	6	18 17 20.43	7
Radcliffe for 1890	22 7 41.387	6	18 12 2.95	7

The variations from these are in R.A.  $+ 20^s.860$  for eighteen years, annual,  $+ 1^s.159$  ; in N.P.D.,  $- 5' 17''.48$  for eighteen years, annual,  $- 17''.64$ . And as the mean annual precession in the two elements is  $+ 1^s.1607$  and  $- 17''.686$  respectively, this comparison would give for proper motion  $- 0^s.002$  in R.A. and  $+ 0''.05$  in N.P.D.

*Blackheath :*

1895 March 1.

*Observations of the Vertical Diameter of the Planet Jupiter.*

By T. J. Moore, Field House, Hatfield, Doncaster.

*(Communicated by Dr. A. M. W. Downing.)*

Telescope used 5-inch reflector, power 125 and 50 diameter s  
with Slade's micrometer.

1892.	No. of Obser- vations.	Mean Value of one Night's Observations (vertical diameter).	Observed dia- meter reduced to dist. 5'20.	Obs. Vertical Diameter re- duced to the Polar Value at dist. 5'20.	Error made on one night's ob- servation, mean value = 36''·11.
1892.					
Oct. 18	20	48''·03	36''·59	36''·16	+ 0''·05
25	40	47'·93	36'·75	36'·32	+ 0'·21
29	30	47'·15	36'·30	35'·87	- 0'·24
Nov. 3	50	46'·36	35'·97	35'·54	- 0'·57
10	40	45'·95	36'·14	35'·71	- 0'·40
30	20	43'·66	36'·11	35'·68	- 0'·43
Dec. 1	20	44'·46	36'·95	36'·52	+ 0'·41
2	10	44'·07	36'·75	36'·33	+ 0'·22
5	20	43'·58	36'·68	36'·25	+ 0'·14
6	20	43'·08	36'·38	35'·95	- 0'·16
12	20	41'·52	35'·74	35'·31	- 0'·81
13	10	41'·67	36'·00	35'·57	- 0'·54
15	20	41'·96	36'·48	36'·05	- 0'·06
1893.					
Nov. 22	20	47'·93	37'·17	36'·99	+ 0'·88
28	14	46'·86	36'·48	36'·30	+ 0'·19
Dec. 4	20	46'·20	36'·21	36'·03	- 0'·08
5	5	46'·38	36'·39	36'·21	+ 0'·10
6	20	46'·40	36'·46	36'·28	+ 0'·17
7	20	46'·58	36'·66	36'·48	+ 0'·37
8	20	45'·98	36'·25	36'·07	- 0'·04
9	20	45'·38	35'·83	35'·65	- 0'·46
11	20	45'·85	36'·33	36'·15	+ 0'·04
12	20	45'·92	36'·41	36'·23	+ 0'·11
14	40	45'·88	36'·57	36'·39	+ 0'·28
15	20	45'·77	36'·55	36'·37	+ 0'·26
20	21	44'·42	35'·87	35'·69	- 0'·42